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WHAT IS OZONE?

Ozone is an odorless, colorless gas that forms both in the Earth's upper atmosphere, the stratosphere, and at ground level. Ozone is the same chemical whether it occurs miles above the earth or at ground level. While ozone in the stratosphere creates a layer that protects us from the sun's harmful ultraviolet (UV) rays, ozone at ground level is a lung irritant and causes numerous adverse health effects.

WHERE DOES GROUND-LEVEL OZONE COME FROM?

Ground-level ozone is not emitted directly into the air, but it is formed by chemical reactions between nitrogen oxides (NO_x) and volatile organic compounds (VOC) in the atmosphere.

Emission Sources	
• Industrial facilities	• Gasoline vapors
• Electric utilities	• Chemical solvents
• Motor vehicle exhaust	• Naturally-occurring sources
• Wood combustion	• Paints
• Small engines	• Consumer products

Ozone pollution is a concern during the summer months because strong sunlight and hot weather result in elevated levels of harmful ozone concentrations in the air we breathe. Many urban and suburban areas throughout the United States experience high levels of ground-level ozone. Many rural areas of the country are also subject to high ozone levels as winds carry emissions hundreds of miles away from their original sources. In New Jersey, all counties experience unhealthy ozone levels during the summer months.

WHAT ARE THE HUMAN HEALTH AND ENVIRONMENTAL EFFECTS?

Health Effects	Environmental Effects
• Chest pain • Coughing • Throat Irritation • Congestion • Existing health conditions, such as bronchitis, emphysema, and asthma, are worsened • Repeated exposure may permanently scar lung tissue • Premature death	• Reduced agricultural crops • Reduced commercial forest yields • Reduced growth of tree seedlings • Increased susceptibility to stresses such as extreme weather, diseases and pests

- Healthy people also experience difficulty breathing when exposed to ozone pollution. Because ozone forms in elevated levels in hot weather, anyone who spends time outdoors in the summer may be affected, particularly children, the elderly, outdoor workers and people exercising.

WHAT ARE THE MONITORING TRENDS IN NEW JERSEY?

Over the years, air quality in New Jersey has been improving. New, more stringent federal health-based standards for both ozone and particulates, which were promulgated in 1997, require states to do more to protect human health. New Jersey's air monitoring program evaluates hourly air quality readings using the national methodology called the Air Quality Index (AQI). The AQI uses five of the six pollutants for which there are national health-based standards (ground-level ozone, particulates, carbon monoxide, nitrogen dioxide and sulfur dioxide) and compares the composite pollutant levels to the federal standards in order to assign an air quality rating such as "good" or "unhealthy."

Based on the AQI scale and applying the new ozone standard, New Jersey had 28 days of unhealthy levels of ozone pollution in 2003. Even with wet, cool summer conditions favorable to healthy air, New Jersey still experienced 19 days of unhealthy ozone pollution in 2004. New Jersey experienced 29 days of unhealthy ozone and fine-particle pollution in 2005.

WHAT IS BEING DONE ABOUT GROUND-LEVEL OZONE?

- Under the federal Clean Air Act, the U.S. Environmental Protection Agency (USEPA) has set health-based standards for ozone in the air we breathe. The USEPA and state and local governments have instituted a variety of multi-faceted programs to meet these health-based standards.

- Throughout the country, additional programs are being put into place to also reduce the precursors of ozone, including NO_x and VOC emissions from vehicles, industrial facilities and electric utilities.

    - Programs are also aimed at reducing pollution by reformulating fuels and consumer/commercial products, such as hairsprays, paints, and chemical solvents that contain VOCs.

    - The DEP adopted rules to further reduce emissions of volatile organic compounds from consumer products and establish requirements that apply to manufacturers, distributors, suppliers and retailers of VOCs.

    - Beginning January 1, 2009, New Jersey will implement the California Low Emission Vehicle (CLEV) program.

    - Non-regulatory programs also encourage communities to adopt practices such as carpooling to reduce harmful emissions.

    - The DEP has planted thousands of trees in urban areas throughout the state in an effort to reforest New Jersey's urban centers. Trees can absorb and reduce levels of ozone, nitrogen dioxide and some particulate matter, in addition to providing shade and lowering temperatures in the summer months, reducing energy demand and emissions from energy generation.

- Even though there are multiple initiatives already in place to reduce ozone and its precursors, we need to do more to reduce ozone in order to improve air quality in New Jersey.